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10/089,987	04/05/2002	Lawrence O'Gorman	249/118	4465

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PassBiometrix, Inc., d/b/a Veridicom, Inc.
1248 Reamwood Avenue
Sunnyvale, CA 94089

EXAMINER

CARTER, AARON W

ART UNIT PAPER NUMBER

2625

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/089,987

Applicant(s)

O'GORMAN ET AL.

Examiner

Aaron W Carter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 14-19 and 28-35 is/are rejected.
- 7) ☒ Claim(s) 7-13 and 20-27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>04/05/2002</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because in Figure 1B, element 120, the word “Density” is used when “Intensity” should have been used. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claims 6 and 28 are objected to because of the following informalities:

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As to claim 6, in line 6, the word “specially” is used as opposed to “spatially” as used in line 5. Clarification is requested.

As to claim 28, in line 4, the phrase “a spoof detection module extract minutia type” appears grammatically incorrect.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claim 6 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the original specification on page 22, paragraph 091, filed April 5, 2002. In that paper, applicant has stated “If the intensity along the ridges increases in a spatially non-uniform way then the system accepts the image as coming from a live person”, and this statement indicates that the invention is different from what is defined in the claim(s) because the claim states that “accept the applied finger as a living finger when the pixel intensity does not increase in the specially (spatially??) non-uniform manner”. For the sake of examination the examiner will treat the claim as though it resembles claim 19 and the phrase “does not increase” is instead “increases”, until clarified.

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5. Claims 28-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 28 recites the limitation "the electrical representation" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3, 6, 14-16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 4,827,527 to Morita et al. ("Morita").

As to claim 1, Morita a biometric sensing system comprising:

An image capture device configured to capture images of an applied finger over a predetermined period of time and create a plurality of electrical representations of the applied

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finger (Fig. 17, 18 and column 12, lines 27-33, wherein a fingerprint image is taken and then a predetermined amount of time passes and another image is taken);

A spoof detection module configured to analyze the plurality of electrical representations for relative temporal anomalies of intensity (fig. 18), or relative temporal anomalies of density, as measured between the plurality of electrical representations, indicative of a living applied finger (column 11, lines 21-31 and column 12, lines 27-39 wherein if a sufficient change in grey level intensity occurs between successive images then the finger is determined to be that of a living human); and

A minutia matching module for finding matches between the electrical representation of the applied finger (Fig. 18, element Sd5).

As to claim 2, Morita discloses the biometric sensing system of claim 1, wherein the spoof detection module is configured to employ an average intensity technique to detect and classify the anomalies, the average intensity technique configured to cause the system to calculate an average intensity for each of the plurality of electrical representations (Fig. 15 and 18, wherein the grey level of the entire image is compared to that of the succeeding image, inherently the average intensity of each image is used for comparison).

As to claim 3, Morita discloses the biometric sensing system of claim 2, wherein the average intensity technique is further configured to cause the system to accept the applied finger as a living finger when the average intensity increases monotonically over the plurality of electrical representations (Fig. 18, elements Sd4).

As to claim 6, Morita discloses the biometric sensing system of claim 1, wherein the spoof detection module is configured to employ a ridge uniformity technique to detect and classify the anomalies, the ridge uniformity technique configured to cause the system to measure pixel intensity along ridges in each of the plurality of electrical representations, determine whether the pixel intensity increases in spatially non-uniform manner, and accept the applied finger as a living finger when the pixel intensity increases in the spatially non-uniform manner (column 10, lines 29-46, wherein the slowly changing corresponds to non-uniform manner).

As to claim 14, please refer to the rejection of claim 1 above.

As to claim 15, please refer to the rejection of claim 2 above.

As to claim 16, please refer to the rejection of claim 3 above.

As to claim 19, please refer to the rejection of claim 6 above.

8. Claims 1, 4, 5, 14, 17 and 18 are rejected under 35 U.S.C. 102(b) as being USPN 4,872,203 by Asai et al. ("Asai").

As to claim 1, Asai a biometric sensing system comprising:

An image capture device configured to capture images of an applied finger over a predetermined period of time and create a plurality of electrical representations of the applied finger (Fig. 18, wherein a fingerprint image is taken and then a predetermined amount of time passes and another image is taken);

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A spoof detection module configured to analyze the plurality of electrical representations for relative temporal anomalies of intensity, or relative temporal anomalies of density (fig. 18), as measured between the plurality of electrical representations, indicative of a living applied finger (Fig. 18 and column 9, lines 9-49, wherein a first finger image is taken and the number of black pixels is counted, a predetermined amount of time is waited, a second image of the finger is taken and the number of black pixels is counted again, due to sweating by the individual the black pixels will become more dense with time and therefore increase in number of black pixels between successive images); and

A minutia matching module for finding matches between the electrical representation of the applied finger (column 9, lines 50-52).

As to claim 4, Asai discloses the biometric sensing system of claim 1, wherein the spoof detection module is configured to employ a pixel density technique to detect and classify the anomalies, the pixel density technique causing the system to determine an ON-pixel value based upon a first electrical representation, determine pixel count for each electrical representation in the plurality of electrical representation, wherein the counted pixels exceed the ON-pixel value, and calculate a delta pixel count over the plurality of electrical representations (Fig. 18 and column 9, lines 9-49, wherein a first finger image is taken and the number of black pixels is counted, a predetermined amount of time is waited, a second image of the finger is taken and the number of black pixels is counted again, due to sweating by the individual the black pixels will become more dense with time and therefore increase in number of black pixels between successive images).

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As to claim 5, Asai discloses the biometric sensing system of claim 4, wherein the pixel density technique is further configured to cause the system to accept the applied finger as a living finger when the delta pixel count increases monotonically over the plurality of electrical representations (Fig. 18, element S10).

As to claim 14, please refer to the rejection of claim 1 above.

As to claim 17, please refer to the rejection of claim 4 above.

As to claim 18, please refer to the rejection of claim 5 above.

9. Claims 28-33 are rejected under 35 U.S.C. 102(e) as being anticipated by USPN 6,233,348 to Fujii et al. ("Fujii").

As to claim 28, Fujii a biometric sensing system comprising:

An image capture device configured to capture images of an applied object and create a plurality of electrical representations of the applied object (Fig. 15, S30 and column 17, lines 60-61, wherein the fingerprint sensor corresponds to the image capture device);

A spoof detection module extract minutia type information from the electrical representation (Fig. 15, S33, wherein feature points correspond to minutia), compare minutia type information with information corresponding to an enrolled object (Fig. 15, S38), calculate a ratio of mismatched minutia type information to matching minutia information, and reject the applied

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object as an inverted spoof when the ratio exceeds a threshold type mismatch ratio (Fig. 15, S39).

As to claim 29, Fujii discloses the biometric sensing system of claim 28, further comprising a minutia matching module configured to compare minutiae extracted from the electrical representation of the applied object with minutiae of an enrolled object (Fig. 15, S33 and S38).

As to claim 30, Fujii discloses the biometric sensing system of claim 29, wherein the image capture device is a fingerprint sensor (Fig. 15, S30 and column 17, lines 60-61).

As to claim 31, please refer to the rejection made for claim 28 above.

As to claim 32, Fujii discloses the method of claim 31, further comprising:

Capturing the plurality of images of the applied object with a fingerprint sensor (Fig. 15, S30 and column 17, lines 60-61); and

Converting the plurality of images into the one or more electrical representations of the applied object (Fig. 15, S32).

As to claim 33, please refer to the rejection made for claim 29 above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii in view of USPN 4,353,056 to Tsikos.

As to claim 34, Fujii discloses the method of claim 31, further comprising:

Capturing the plurality of images of the applied object with a fingerprint sensor (Fig. 15, S30 and column 17, lines 60-61); and

Converting the plurality of images into the one or more electrical representations of the applied object (Fig. 15, S31).

Fujii does not disclose expressly that the sensor is a capacitive sensor.

Tsikos discloses a capacitive fingerprint sensor (Title).

Fujii & Tsikos are combinable because they are from the same art of image processing and more specifically fingerprint scanning and authentication.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a capacitive fingerprint sensor in the process of obtaining a fingerprint sample as disclosed by Fujii.

The suggestion/motivation for doing so would have been to provide a fingerprint sensor of simple structure and works fast (column 1, lines 43-59).

Therefore, it would have been obvious to combine Fujii with Tsikos to obtain the invention as specified in claim 34.

As to claim 35, the combination of Fujii and Tsikos discloses the method of claim 34, further comprising matching minutiae extracted from at the one or more electrical representations with minutiae from an enrolled object (Fig. 15, S33 and S38).

Allowable Subject Matter

12. Claims 7-13 and 20-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

USPN 5,088,817 to Igaki et al. discloses live finger detection.

USPN 6,144,757 to Fukuzumi discloses live finger detection.

USPN 6,181,808 to Fukuzumi discloses live finger detection.

USPN 6,175,641 to Kallo et al. discloses live finger detection.

USPN 5,737,439 to Lapsley et al. discloses live finger detection.

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USPN 5,990,804 to Koyama discloses live finger detection.

USPN 5,953,441 to Setlak discloses live finger detection.

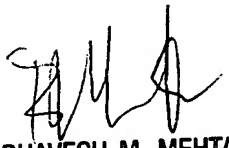
USPN 6,597,945 to Marksteiner discloses live finger detection.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron W Carter whose telephone number is (571) 272-7445. The examiner can normally be reached on 8am - 4:30 am (Mon. - Fri.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Auc


BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600